## Solutions: Examining Relationships Checkpoint 2

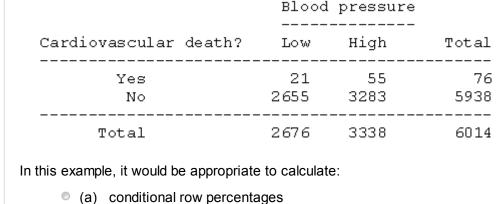
## Question 1

High blood pressure is unhealthy. Here are the results of one of the studies that link high blood pressure to death from cardiovascular disease. The researchers classified a group of white males aged 35 to 64 as having Low blood pressure or High, then followed the subjects for five years. The following two-way table gives the results of the study:

Select one answer. 10 points

Select one answer.

10 points



- (b) conditional column percentages
  - (c) the correlation coefficient r
  - (d) the five-number summary of both variables
- Correct answer: (b)

(e) none of the above

Question 2

## A local ice cream shop kept track of the number of cans of cold soda it sold each day, and the temperature that day, for two months during the summer.

The data are displayed in the scatterplot below:

195

190 185 Number of Cans Sold 180 175 170 Temperature in degrees Fahrenheit (F) The one outlier corresponds to a day on which the refrigerator for the soda was broken. Which of the following is true? (a) A reasonable value of the correlation coefficient r for these

(c) If the outlier were removed, r would increase. (d) If the outlier were removed, r would decrease.

5/9\*(F-32)), the value of r would change accordingly.

(b) If the temperature were measured in degrees Celsius (C =

- (e) Both (b) and (c) are correct.
- Question 3
  - Suppose that the correlation r between two quantitative variables was found to

Correct answer: (b)

be r = 0. This means that:

(e) none of the above.

Correct answer: (c)

data is 1.2.

## (b) there is no linear relationship between the two variables.

(c) there is a strong relationship between the two variables. (d) there is no relationship between the two variables.

(a) there is a strong linear relationship between the two variables.

Select one answer.

10 points

Select one answer.

10 points

Question 4

A correlation of r = .85 is found between weekly sales of firewood and cough

(a) There is a pretty strong positive linear relationship between

drops over a 1-year period. Which of the following is true?

sales of firewood and cough drops.

(d) Both (a) and (c) are true.

(e) None of the above.

(b) Fire must be the cause of coughing. (c) Temperature is a possible lurking variable that is "behind" this

Question 5

165 -

155

145

135

Time

relationship.

Correct answer: (c)

(in seconds) on a treadmill to raise his or her pulse rate to 140 beats per

minute. The o's correspond to females and the +'s to males. Which of the following conclusions is most accurate?

125 115 90 100 110 120 130 140 150 160 170 180 Weights (a) There is a positive correlation between gender and weight, since men tend to weigh more. (b) There is a negative correlation between time and weight for males and for females.

(c) There is a positive correlation between time and weight for

Question 6

What can we say about the relationship between the correlation r and the

(a) Both r and b always have values between -1 and 1.

slope b of the least-squares line for the same set of data?

(c) r and b have the same sign (+ or -).

(d) the slope b is always equal to the square of the correlation r. (e) b is always larger than r.

(b) r is always larger than b.

males and for females.

Correct answer: (b)

Correct answer: (c)

separately, AirMedian does better.

Which of the following is correct?

variables.

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Question 7

(d) Both (a) and (b) are correct.

(e) Both (a) and (c) are correct.

A study was done on the timeliness of flights (on-time vs. delayed) of two major airlines: StatsAir and AirMedian. Data were collected over a period of time from five major cities and it was found that StatsAir does better overall (i.e., has a

(c) "City" is a lurking variable in this example.

smaller percentage of delayed flights). However, in each of the five cities

- (a) This situation is mathematically impossible. (b) This is an example of Simpson's Paradox.
- Correct answer: (e)

(d) This is an example of a negative association between

When faced with a data analysis problem that involves two variables, explain how you would decide which graphical display and numerical measures to use.

(e) Both (b) and (c) are correct.

Please answer the question below. Your response will not be graded, but it will be available for your instructor to Question 8

Select one answer. The data in the scatterplot below are an individual's weight and the time it takes

10 points

Μ

Select one answer.

10 points

Select one answer.

10 points

0 points

Submit and finish

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